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USSR UDC: 669.018.8

TOMASHOV, N. D., RUSKOL, Yu. S., FILIPPOV, A. F., BELYANCHIKOV, L. N., PLAVNIK, G. M., and FEDOROVA, G. M., Institute of Physical Chemistry, Academy of Sciences USSR

"Corrosion Behavior of Titanium-Molybdenum-Chromium Alloys"

Moscow, Zashchita Metallov, Vol 6, No 5, Sep-Oct 70, pp 499-504

Abstract: This paper deals with the effect of chromium on the corrosion resistance of titanium alloys containing 5 and 10% molybdenum. The electrochemical and corrosion behavior of the alloys was studied by potentiometry, both the current and weight losses being the indicators of the corrosion rate. It has been shown that the β-phase of titanium alloys containing a stable (under the testing conditions) component such as molybdenum, possesses elevated corrosion resistance. In the active dissolution of two-phase α+β--alloys of titanium with molybdenum, predominantly the α-phase goes into solution, while the β-phase remains at the surface in the form of a finely disperse layer. In the active

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TOMASHOV, N. D., et al, Zashchita Metallov, Vol 6, No 5, Sep-Oct 70, pp 499-504

dissolution in nonoxidizing media, the corrosion rate of Ti-Mo-Cr alloys markedly decreases only on addition of chromium in an amount sufficient for producing single-phase β-alloys (Ti-5Mo-10Cr and Ti-10Mo-10Cr); however, if the alloys have a α+β-structure, then the corrosion rate remains about the same (as compared to Ti-Mo alloys). Chromium addition reduces the tendency of alloys to over-passivation, which is caused by the presence of Mo, and the Ti-5Mo-10Cr alloy exhibits the same low corrosion rate within 0.15 to 1.2 v as titanium or Ti-[illegible] alloy. At potentials which are more positive than 1.2 v, the corrosion rate of Ti-Mo-Cr alloys begins to increase owing to the tendency of chromium to over-passivation.

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Ruslanov, V. I.

transistors/radio engineering

JPRS 54704

22 December 1971

NONLINEAR AND MICROWAVE RADIO ENGINEERING SYSTEMS

Selected articles from the Russian-language book edited by L. D. Bakhrakh, corresponding member of the USSR Academy of Sciences and V. I. Samoylenko, candidate of engineering sciences: Nelineynyye i Sverkhvysokochastotnyye Radiotekhnicheskiye Sistemy, Trudy Moskovskogo Ordena Lenina Aviatsionnogo Instituta imeni Sergo Ordzhonikidze, Vol 2, No 215, 1970, signed to press 14 October 1970, Machine Building Press, Moscow.

CONTENTS

[I - USSR - F]

RUSLANOV, V. I.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

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Figure 15. Model of a photo-sensitive unijunction transistor.
(1) E_1 (2) R_1 (3) B_{21} (4) R_{1-1} (5) R_{103} (6) B_1.

Conclusion

The high switching properties of unijunction transistors are very valuable for use in various automation circuits, and circuits in pulsed and computing equipment.

The possibilities of integral actuation and control by light expand the field of their application even wider.

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UDC 629.7.051:621.396.6.001

UNIJUNCTION TRANSISTORS AND THEIR POSSIBLE APPLICATIONS

Engineers A. K. Grobnev,
A. I. Krivonosov, and
V. I. Ruslanov

Pages 173-185

Unijunction transistors are one of the most promising classes of semiconductor instruments. The advantages of these transistors are: the presence of a stable region of negative resistance characteristics, weak dependence of the switching voltage upon temperature, high resistance in a closed state and low resistance in an open state, high degree of reliability (the intensity of their failures amounts to less than 0.01 percent per thousand hours of operation). Besides this, integral circuits may be assembled with unijunction transistors.

With the use of these instruments, we may design simple and reliable circuits, which has also predetermined their application in such important devices as rocket control systems and the apparatus of artificial earth satellites.

Principles of Operation, Parameters, and Structures of Unijunction Transistors

A unijunction transistor is a three-electrode semiconductor instrument, which usually consists of a base region; a crystal of n-type silicon with ohmic contacts of two bases. The third electrode serves as an emitter; it forms a rectifying contact with the base region. The conventional designation of such a transistor is shown in Figure 1, a, and a simplified circuit diagram in Figure 1,b. The diode in Figure 1,b, reflects the presence of a p—n-junction between the emitter and the base region; R_{b1} and R_{b2} are the resistances between this junction and the contacts of the first (B_1) and the second (B_2) bases, respectively. [R_b = $R_б$]

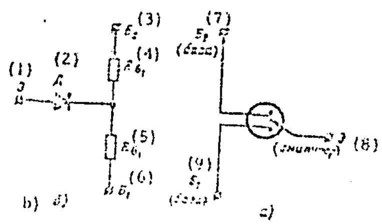

Figure 1. Unijunction transistor: (a) conventional designation; (b) circuit diagram. (1) Э (emitter); (2) D; (3) B_2; (4) R_{b2}; (5) R_{b1}; (6) B_1; (7) B_2 (base 2); (8) Э (emitter); (9) B_1 (base 1).

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UDC 621.375.67:621.382

MALYSHKOV, G.M. RUSLANOV, V.I.

"Regulation Of Hysteresis Loop Of Relay Circuits With The Aid Of Opticoelectronic Converters"

V sb. Elektronnaya tekhnika v avtomatike (Electronics Techniques In Automation--Collection Of Works), Moscow, Izd-vo "Sovetskaya Radio," No 2, 1971, pp 50-59

Abstract: Use of opticoelectronic semiconductor converters makes it possible, without the marked complications of widely known circuits, to produce separate regulation of the width of the hysteresis loop without change of the magnitude of the percentage of feedback. In the present work an opticoelectronic semiconductor converter was used, consisting of an emissive gallium arsenide diode and a type FT-1K silicon phototransistor. Formulas for determination of the hysteresis loop of relay circuits with feedback of voltage and current (including a Schmitt trigger) are presented. The parameters are given of the elements of specific circuits. 3 fig. 5 ref.

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USSR

UDC 621.382.3

GREBNEV, A. K., KRIVONOSOV, A. I., RUSLANOV, V. I.

"Unijunction Transistors and Possibilities for Their Use"

Tr. Mosk. aviats. in-ta (Works of the Moscow Aviation Institute), 1970, Issue 215, pp 173-183 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5B156)

Translation: Problems are considered connected with the principles of operation, characteristics, parameters, and structures of unijunction transistors, and such basic types of circuits in which these devices are used. Unique material is presented which concerns models of unijunction transistors. 15 ill. 2 tab. 8 ref.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

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UDC 621.374

KRIVONOSOV, A. I., MALYSHKOV, G. M., RUSLANOV, V. I.

"Pulse Circuits with Semiconductor Optical-Electronic Converters"

Novye beskontaktn. elektron. ustroystva. Ch. 1 (New Contactless Electronic Devices. Part 1), Moscow, 1970, pp 156-161 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8G250)

Translation: A series of schematics are presented in which the advantages of image converter tubes are used: a relay made of mutually complementing transistors with positive feedback where the presence of an optical coupling in the image converter tube permits significant decrease in the resistance of the feedback resistor; a circuit using the inertial properties of the image converter tube with photoresistors; a pulse width modulator; and various logical circuits.

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CIRC ACCESSION NO--AN0121647 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCIENTIFIC AND TECHNICAL CONFERENCE RECENTLY HELD IN MYTISHCHI INVOLVED THE HOSTS; THE LEADERS OF ENTERPRISES, NOT (SCIENTIFIC ORGANIZATION OF LABOR) SERVICES, PARTY ORGANIZATION SECRETARIES FROM PLANTS AND FACTORIES IN PUSHKINO, ZAGORSK, AND SHCHELKOVO RAYONS. OPENING THE CONFERENCE, THE LEADER OF THE SECTION OF THE TECHNICAL AND ECONOMIC COUNCIL ON THE INTRODUCTION OF NOT AND PRODUCTION CULTURE, YU. F. DENISOV, STATED THAT THE INDUSTRY OF THE MYTISHCHI RAYON HAS PASSED THE FOUR YEAR MARK IN THE FIVE YEAR PLAN IN GOOD CONDITION. THE VOLUME OF PRODUCTION IN COMPARISON WITH 1965 HAS INCREASED TO THE EXTENT THAT IN FOUR YEARS IN EFFECT A NEW MYTISHCHI MACHINE BUILDING PLANT HAS BEEN CONSTRUCTED. THE PRODUCTIVITY OF LABOR HAS BEEN INCREASED BY OVER 30 PERCENT. WHAT IS MOST IMPORTANT IN THE MYTISHCHI METHOD OF INCREASING THE OUTPUT OF PRODUCTS WAS STATED BY THE AGENDA FOR THE CONFERENCE ITSELF: "COMBINED INTRODUCTION OF SCIENTIFIC ORGANIZATION OF LABOR AND CONTROL UNDER CONDITIONS OF SCIENTIFIC PROGRESS, THE NECESSARY MEANS FOR INCREASING THE PRODUCTIVITY OF LABOR". THE TRUE EFFECT OF THIS WAS INDICATED BY THE CHIEF ENGINEER OF "PODMOSKOV'YE" A. T. ZHIGALIN, CHIEF ENGINEER V. N. DONSKOV AND PARTY COMMITTEE SECRETARY G. M. ALEKSEYEV FROM THE MYTISHCHI MACHINE BUILDING PLANT, THE DIRECTOR OF THE MYTISHCHI EXPERIMENTAL MOTOR VEHICLE PARTS PLANT A. KH. KASUMOV, THE CHIEF ENGINEER OF THE MYTISHCHI FURNITURE FACTORY V. S. BULKIN AND OTHER COMRADES.

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CIRC ACCESSION NO--AN0121647 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--AT THE ENTERPRISES OF THE REGION IN THE PAST TWO YEARS ALONE, 2,200 MEASURES HAVE BEEN INTRODUCED IN THE AREA OF SCIENTIFIC ORGANIZATION OF LABOR, PROVIDING AN ECONOMIC EFFECT OF 1.5 MILLION RUBLES. IN MYTISHCHI, 200 CREATIVE TEAMS ARE AT WORK, COMBINING OVER 2,000 NOT ADVOCATES. THIS MEANS THAT NOT ONLY THOSE WHO ARE REQUIRED BY THEIR DUTIES ARE OCCUPIED IN INTRODUCING NOT BUT THE COMMUNITY IS BROADLY INVOLVED IN NOT ACTIVITY. IT SHOULD BE STATED THAT THE ORGANIZATIONAL ACTIVITY LIKE MYTISHCHI HAS GONE BEYOND THE KINDERGARTEN STAGES. THIS IS INDICATED IN PARTICULAR BY THE USAGE OF METHODS OF SOCIOLOGICAL INVESTIGATION IN THE RAYON, PARTICULARLY AT THE MYTISHCHI MACHINE BUILDING PLANT AND THE PROLETARSKAYA POBEDA FACTORY. BUT STILL, MUCH REMAINS TO BE DONE IN ORGANIZING LABOR AT THE ENTERPRISES OF THE REGION. THE PARTICIPANTS OF THE CONFERENCE STATED. WE MUST NOT BE SATISFIED WITH THE FACT THAT SOME PLACES THE BEST MODELS OF ORGANIZATION HAVE BEEN ACHIEVED BUT RATHER WE MUST MOVE FORWARD TO MAKE ALL LABOR ACTIVITY MORE EFFECTIVE. THIS REQUIRES THAT THE RESULTS OF SCIENTIFIC INVESTIGATIONS BE BRAVELY INTRODUCED TO PRACTICAL EXPERIENCE. THE DIRECTOR OF THE SCIENTIFIC RESEARCH CENTER OF NOT AND CONTROL OF INDUSTRY, B. N. MEL'NIKOV, READ A REVIEW REPORT, AND CALLED UPON THE NOT ADVOCATES TO IMPROVE THE QUALITY OF NORMALIZATION AND EXPAND ITS SPHERE. THE LABOR IS GENERALLY ORGANIZED RATHER WELL AT THE ENTERPRISES, BUT ALL REGULATION OF ACTIVITY IS CONCENTRATED AROUND THE MAIN PRODUCTION WORKERS. THE LABOR OF TEMPORARY WORKERS, ENGINEERING AND TECHNICAL WORKERS AND SALARIED WORKERS IS NORMALIZED WITH NO ORDER WHATSOEVER.

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CIRC ACCESSION NO--AN0121647 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--THIS NOT ONLY INFLUENCES THE EFFECTIVENESS OF LABOR OF THESE TYPES OF WORKERS, BUT CREATES IDEAL CONDITIONS FOR LOAFERS. THE CONFERENCE WILL DOUBTLESS HELP THE INDUSTRIAL EXECUTIVES IN THEIR PRACTICAL ACTIVITIES.

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USSR

UDC 666.192.462

ZOLOTAREVA, R. S., Candidate of Technical Sciences, and KUSLOV, V. N., KOSTYRYA, V. N., and MOSKALENKO, A. M., Engineers (NIIavtosteklo /expansion unavailable/)

"Efficient Utilization of Graphite in the Production of Quartz Tubes"

Moscow, Steklo i Keramika, No 12, Dec 73, p 33

Abstract: Quartz for the production of quartz tubes at the "Avtosteklo" plant is melted in graphitized crucibles 172 x 350 mm, made from a blank 200 mm in diameter and 420 mm long. The crucible is made from the blank by means of a goring cutter on a lathe, with utilization of 14% of the material of the blank. An efficient method for cut-out of the blank by a special milling cutter is proposed by the authors, which would result in an increase of the coefficient of utilization of the material by a factor of 2.2. This would save the plant 19,000 rubles per year. 3 figures.

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USSR

RUSNAN, L., Head, Chair of Civil Defense, Kuban' Agricultural Institute

"An Electric Stand to Show the 'Veterinary Processing of Animals'"

Moscow, Voyennyye Znaniya, No 12, Dec 70, p 48

Translation: The Civil Defense Chair of the Kuban' Agricultural Institute designed and is successfully using an electric stand "Veterinary Processing of Animals" for teaching purposes. We shall now tell you about its construction and working principle (cf. figure below). The stand, 110 x 80 x 10 cm in size, consists of the following main parts: frame, light layout, chart of veterinary processing of animals, and electric pointer. The frame is made of 10-mm plywood. On the front is the light layout. The back is enclosed with 5-mm plywood. Tin boxes with bulbs screwed in are set into the frame. Inside is the electrical circuit of the stand. The light layout (made of 10-mm plywood) serves to illuminate all the main elements of the chart. It has 25 windows cut out and covered with Plexiglas. The individual elements of the chart are illuminated through these windows. The area for veterinary processing of the animals and the field slaughter site are painted on drawing paper which is glued over the light layout in such a way that the main elements of the chart fit over the corresponding windows through which the light comes. The stand is controlled with an electric pointer and button. The pointer

1/9

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RUSMAN, L., Voyennyye Znaniya, No 12, Dec 70, p 48

is connected by an electric cord to a socket on the side of the stand. Each pressing of the button in the course of the course of the talk lights up some part of the stand. The following materials are needed to hook-up the circuit: 12-v automobile lights, power transformer from a "Rekord" television set, ShI-25/4 stepping switch, 150 microfarad, 300 volt capacitor, D-7Zh diode, switch and socket, electric cord with a plug to connect to the general power-supply system, and about 100 m of wire. How is the stand used? After telling what veterinary processing of animals is, its purpose, and precautions that the handlers must take, the speaker connects the electric pointer to the stand. He then presses on the button, lighting up the windows on the chart. The first pressing on the button illuminates corral No. 1 and part of the table with the size of this corral. The speaker explains that infected animals are kept in the corral as they arrive for processing. When the button is pressed again, corral No. 1 is extinguished and passageway No. 1 and its size on the table are lit up. This is where the animals are sorted and monitored (for radioactivity). The third pressing of the button turns on the pasture for healthy animals, the place to which animals not requiring treatment are driven. The fourth pressing lights up the boundaries of the "dirty" half of the area. They remain lit until the button is pressed for the 11th time.

2/9

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USSR - RUSMAN, L., Voyennyye Znaniya, No 12, Dec 70, p 48

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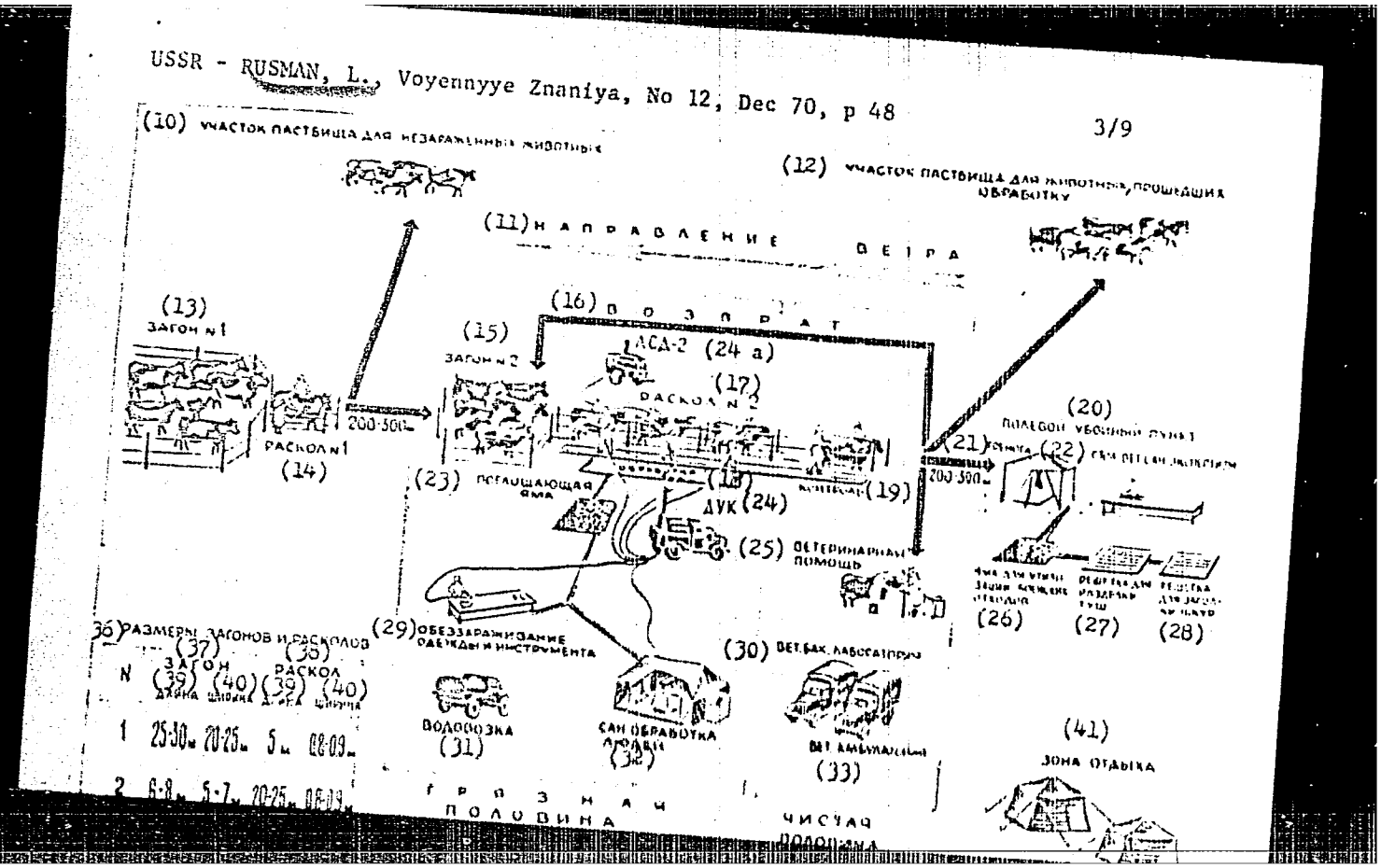

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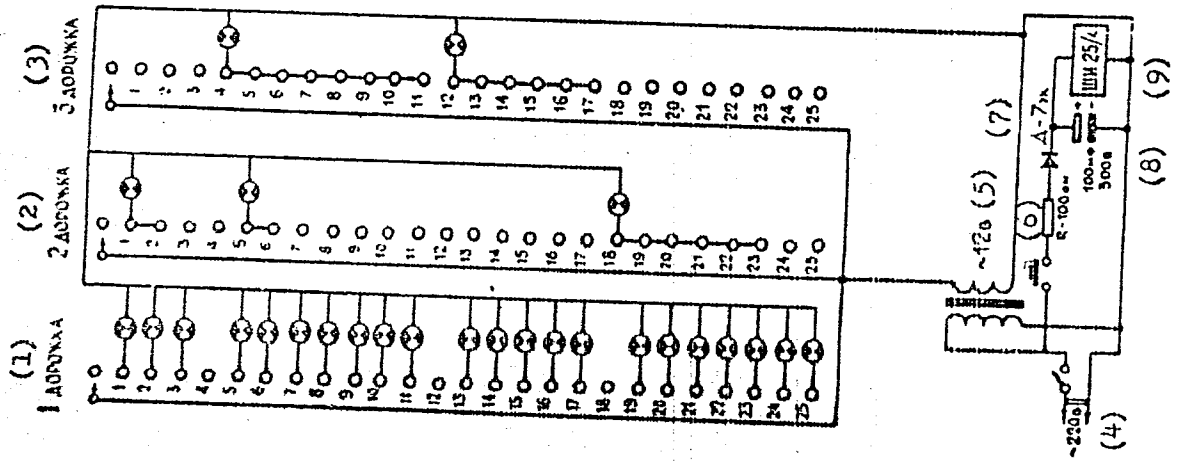
RUSMAN, L., Voyennyye Znaniya, No 12, Dec 70, p 48



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RUSMAN, L., Voyennyye Znaniya, No 12, Dec 70, p 48

Diagram

1 - Track 1
2 - Track 2
3 - Track 3
4 - 220 v
5 - 12 v
6 - R-100 o
7 - D-7Zh
8 - 100 mf, 300 v
9 - ShI-25/4
10 - Portion of pasture for uncontaminated animals
11 - Direction of wind
12 - Portion of pasture for animals arriving for treatment
13 - Corral No. 1
14 - Passageway No. 1
15 - Corral No. 2
16 - Return
17 - Passageway No. 2

5/9

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

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RUSMAN, L., Voyennyye Znaniya, No 12, Dec 70, p 48

18 - Treatment
19 - Control
20 - Field slaughter site
21 - Tripod
22 - Table for veterinary evaluation
23 - Absorbing pit
24 - DUK
24a - LSD-2
25 - Veterinary care
26 - Pit to utilize slaughter-house waste
27 - Grate for dressing carcasses
28 - Grate for salting hides
29 - Disinfection of clothing and instruments
30 - Veterinary bacteriological laboratory
31 - Water truck
32 - Sanitary processing of people
33 - Veterinary dispensary
34 - Dirty half
35 - Clean half
6/9

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

RUSMAN, L., Voyennyye Znaniya, No 12, Dec 70, p 48

36 - Size of corrals and passageways
37 - Corral
38 - Passageway
39 - Length
40 - Width
41 - Rest area

When the button is pressed a second time, corral No. 1 is extinguished and passageway No. 1 and its dimensions on the table are lit up. Here is where the animals are sorted and monitored. The third pressing of the button lights up the pastures for the uncontaminated animals. Here is where the cattle not requiring processing are driven. The fourth pressing lights up the boundaries of the "dirty" half of the area. They remain lit until the button on the pointer is pressed for the 11th time. The fifth pressing lights up corral No. 2 and part of the table with its dimensions. Explaining that the animals go from here to another passageway, the speaker presses the button for the 6th time, thereby lighting up passageway No. 2, where the animals' hair or wool is treated with solutions or detergents. The speaker presses the button 3 times in succession, alternately lighting up and extinguishing LSD-2 and DUK vehicles and the water truck. The 10th pressing of

7/9

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RUSMAN, L., Voyennyye Znaniya, No 12, Dec 70, p 48

the button lights up the table for wet processing of the individual means of protection of the personnel, clothing, and instruments. The 11th pressing lights up the absorbing pit to which the contaminated water flows through gutters. The 12th to 18th pressings outline the boundaries of the "clean" half of the area. The 13th pressing illuminates the bench at the end of passageway No. 2 where the animals are inspected and monitored. If the level of contamination of the hair or wool is found to be above permissible limits, the animal is returned for a second treatment (the 14th pressing lights up the return route). Sick animals receive veterinary care in the "clean" half of the area. Near a tethering place for the animals (15th pressing) are stationed mobile veterinary dispensaries and a veterinary bacteriological laboratory (16th pressing). Healthy animals whose level of radioactive contamination of hair or wool after veterinary processing does not exceed permissible limits are returned to the section of the pastures reserved for animals that have been processed (17th pressing). A field slaughter site may be set up in the area of veterinary processing (18th pressing). This part of the chart remains illuminated until the 23rd pressing. The speaker shows how the training section is equipped. A tripod with grate underneath, table for veterinary evaluation, grates for dressing carcasses and salting hides, and pit for wastes are lit up.

8/9

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RUSMAN, I. Voyennyye Znaniya, No 12, Dec 70, p 48

After the veterinary processing is completed, the personnel of the units concerned with animal protection undergo complete sanitary processing (24th pressing). The people then go into the rest area (25th pressing), whereupon the speaker switches off the lights and disconnects the pointer. The experience gained with the use of the electric stand shows that it is a highly effective visual aid in holding the attention of individuals receiving training in the rudiments of veterinary processing of animals.

9/9

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UDC 616.988.75-084.47 "1969"

BOBYLEVA, T. K., SLEPUSHKIN, A. N., RUSSINA, A. Ye., VITKINA, B. S., GRINEBERG, I. R., TARASOV, A. A., LIVERGAND, M. I., and ZHDANOV, V. M., Institute of Virology imeni Ivanovskiy, Academy of Sciences USSR, and Smolenskaya Oblast Sanitary Epidemiological Station

"Evaluation of the Efficacy of Mass Vaccinations Against Influenza" Report III

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii No 9, 1971, pp 18-23

Abstract: Double vaccination of approximately 50% of the population of the city of Smolensk with live influenza vaccine in 1968 proved to be effective in controlling the disease even during the 1969 epidemic caused by a new antigenic variant of type A influenza virus. Almost half as many contracted the disease as in the nearby cities of Vitebsk and Kaluga, where the population was not vaccinated -- 28.8, 54.3 and 48.7%, respectively. The difference between the adult sick rates was even greater -- 17.9, 38.1, and 41.2%, respectively. The side effects of the vaccine were minimal. The results of a similar mass vaccination program in Yartsevo were poor mainly because vaccine from the same strain had been used for three successive years and most of the people had become immune to it. Hence the vaccine strains should be changed periodically (once every 2 or 3 years).

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VITKINA, B. S., RUSSINA, A. Ye., BOBYLEVA, T. K., GRINEBERG, I. R., SOKOLOVA, N. N., DREYZIN, R. S., and SLEPUSHKIN, A. N., Smolenskaya Oblast Sanitary Epidemiological Station, and Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences

"Etiology and Epidemiology of the 1969 Influenza Outbreak in Smolensk"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 71, p 494

Translation: The paper presents results of a study of the 1969 influenza outbreak in Smolensk, where almost one-half of the inhabitants had received live influenza vaccines during the preceding five autumn and winter seasons. The disease developed more gradually than during the two previous epidemics (1965 and 1967). Influenza virus was isolated from 127 out of 355 patients. A study of the antigenic structure of 20 strains revealed that all strains were neutralized by 1/68 Hong Kong serum either completely or to one-half of the homologous titer. No essential differences were found between strains obtained from vaccinated and nonvaccinated individuals. All strains were highly sensitive to the inhibitors present in normal guinea pig or horse serum. Serological shifts in the patients coincided with the epidemic influenza curve. The frequency of influenza diagnosed among 235 clinic patients was compared with that of 304

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USSR

VITKINA, B. S., et al, Voprosy Virusologii, No 4, Jul/Aug 71, p. 494

hospitalized patients. Serological confirmation of the diagnosis was 8% greater among the hospitalized group. However, at the end of the epidemic, when morbidity returned to almost normal level, influenza was twice as frequent in clinic than in hospitalized patients. Comparison of the frequency of influenza and of other acute respiratory diseases recorded during the interepidemic year of 1968 and during the epidemic in 1969 revealed that the frequency of parainfluenza and of adenoviral infections was approximately the same during both periods.

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USSR

UDC 616.936-084.4-036.8(574)

RUSSINA, YE. K., GROSHKOVA, I. M., and RYBALOVA, R. N., Ministry of Health Kazakh SSR; Kazakh Institute of Epidemiology and Microbiology; Republic Sanitary-Epidemiological Station

"Results of Malaria Control in the Kazakh SSR"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 41, No 6, Nov/Dec 72, pp 687-689

Abstract: In 1954 malaria as a mass disease had been eliminated in the whole of the Kazakh SSR with the exception of Eastern Kazakhstan Oblast'. The number of malaria cases in that year was 14.6 per 100,000 population. It decreased to 0.6 per 100,000 population in 1960 (59 cases, of which 25 were of foreign origin) and 169 cases in 1961-67, of which 74 were of local origin. In 1968 there was not a single case of malaria of local origin. Although malaria has been practically eliminated since 1960 in Kazakhstan, just as in the whole of the USSR, vigilance is indicated because of the possibility of importation of the infection from abroad and increased chances for breeding of mosquitoes in connection with the expansion of irrigated agriculture and the construction of water reservoirs. Preventive measures are being carried out in areas of irrigated fields, regions in which rice is grown, and areas in which water reservoirs and hydraulic engineering installations are being constructed.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 621.643.001.5

BORISOV, P. P., SUROVOVA, V. N., IVANOV, A. G., DAVYDOVA, L. N., and RUSSIYAN, A. V., VNIImontazhspetsstroy [All-Union Scientific Research Institute for Installation and Specialized Construction Operations]; ANUCHKIN, M. P., VNIIST [All-Union Scientific Research Institute for the Construction of Trunk Pipelines]

"Increasing the Breaking Strength of 17G1S Steel by Treating It With Synthetic Slags"

Moscow, Stroitel'stvo Truboprovodov, No 7, Jul 71, pp 26-28

Abstract: The article describes results of a study at VNIImontazhspetsstroy on the ability of specimens of 17G1S steel, refined in a ladle with synthetic slag, to resist the propagation of static and dynamic bending cracks in the stressed state. For comparison, a study was also made of specimens of the steel which had not been refined with synthetic slag. It was found that treatment of 17G1S steel with synthetic slag in a ladle increases the crack initiation and propagation energy under all testing conditions and hence the

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

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BORISOV, P. P., et al., Stroitel'stvo Truboprovodov, No 7, Jul 71, pp 26-28

total energy to fracture. The treated steel is characterized by high resistance to crack propagation in the stressed state at low temperatures. The operating reliability of gas pipelines can be increased by using treated 17G1S steel.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 621.039.524.034.3.001.5

PULYAYEV, V. F., RUSSIYANOV, A. F., YUSHKO, V. A.

"D1-P Experimental Unit for Studying Models of Heat Exchange Equipment"

Dissotsiiruyushch. gazu kak teplonositeli i rab. tela energ. ustanovok -- V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i tekhn. Press, 1970, pp 105-108 (from RZh-Elektrotekhnika i Energetika, No 5, May 1971, Abstract No 5U195)

Translation: A study is made of the flow chart of an experimental test unit for testing models of heat exchange equipment. The structural elements of the basic assemblies of the test unit and the experimental heat exchange equipment are described. The D1-P test unit provides for the possibility of studying the heat exchange and hydrodynamics of models of condensers, regenerative evaporators, gas regenerators and also the fuel assemblies of nuclear reactors with a dissociating heat exchange agent N_2O_4. There is 1 illustration.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 038 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--DEVICE FOR STUDYING PHOTOGRAPHIC PROPERTIES OF PHOTOPOLYMERIC LAYERS -U-

AUTHOR-(05)-FRUNZE, N.K., YASHIN, V.P., BRAZHNIKOV, YE.N., RUSSIYAN, YE.K., SEMENOVAZHUKOVA, M.P.

COUNTRY OF INFO--USSR

SOURCE--ZH. NAUCH. PRIKL. FOTOGR. KINEMATOGR. 1970, 15(2), 143-5

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, METHODS AND EQUIPMENT

TOPIC TAGS--POLYMER, POLYPROPYLENE, PLASTIC FILM, UV RADIATION, POLYACRYLATE RESIN, ACETATE, PHOTOGRAPHIC PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1423 STEP NO--UR/0077/70/015/002/0143/0145

CIRC ACCESSION NO--AP0116870

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 038 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0116870

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN APP. WAS DESIGNED FOR DETG. THE SENSITOMETRIC CHARACTERISTICS OF PHOTOPOLYMERS. THE SAMPLE WAS PLACED BETWEEN THE BASE OF A FRAME AND AN ELASTIC TRANSPARENT FILM MADE OF POLYPROPYLENE. THE SPACE BETWEEN THE FRAME AND THE FILM WAS EVACUATED SO THAT THE FILM WAS TIGHTLY PRESSED TO THE SAMPLE AND THE SAMPLE TO THE BASE OF THE FRAME THAT WAS THERMOSTATED. A PARALLEL UV RADIATION BEAM OF DIAM. 100 MM WAS USED SO THAT 70 TIMES 70 MM SAMPLES COULD BE TESTED. POLYACRYLATES WERE EXAMD. BY COATING THEM ON A TRANSPARENT TRIACETATE SUBSTRATE TO A THICKNESS OF 50 MU. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--PHOTONEUTRON CROSS SECTIONS FOR THALLIUM 203 AND THALLIUM 205 -U-

AUTHOR-(04)-ANTROPOV, G.P., MITROFANOV, I.YE., PROKOFYEV, A.I., RUSSKIKH, V.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 116-21

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--PHOTONEUTRON, EXCITATION CROSS SECTION, THALLIUM ISOTOPE, COMPUTER CALCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0209 STEP NO--UR/0048/70/034/001/0116/0121

CIRC ACCESSION NO--AP0105285

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105285

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE YIELDS OF THE N FROM THE REACTIONS (GAMMA, N) AND (GAMMA, 2N) ON PRIME203 TL AND PRIME203 TL NUCLEI WERE MEASURED AT E PRIMEMAX. SUBGAMMA EQUALS 7-20 MEV. THE EXPTL. DETD. VALUES WERE USED TO CALC. THE CROSS SECTIONS OF THESE REACTIONS. THE CALCN. WAS CARRIED OUT ON A COMPUTER BY THE PENFOLD LEISS METHOD WITH A 0.5 MEV STEP. THE RESULTS ARE PLOTTED AND DISCUSSED.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

AA0052381 Russkov, Yu. P.

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, /-70

243291 PRESSURE REGULATOR for improved control of air conditioning systems on planes has been designed. The basic drawback of the presently used regulator is that the rate of growth of pressure in the operating mechanism is higher than the drop of pressure and this difference influences the stability of the device. Briefly, the regulator consists of pipes 1, 2 and 3, master device 4 and operating mechanism 5, containing a membrane 6, bellows 7, springs 8 and 9, centre 10, serving as shutter to nozzle 11, counter-weight 12, attached indirectly to the shutter 13 and chambers 14 and 15 and reducing valves 16 and 17, pneumatic diode 18 with valve 19.

9.2.68 as 1216835/40-23.G.I.VORONIN et al.(12.9.69) Bul 16/5.5.69. Class 42q. 61a. Int.Cl.C 05d, B 64d.

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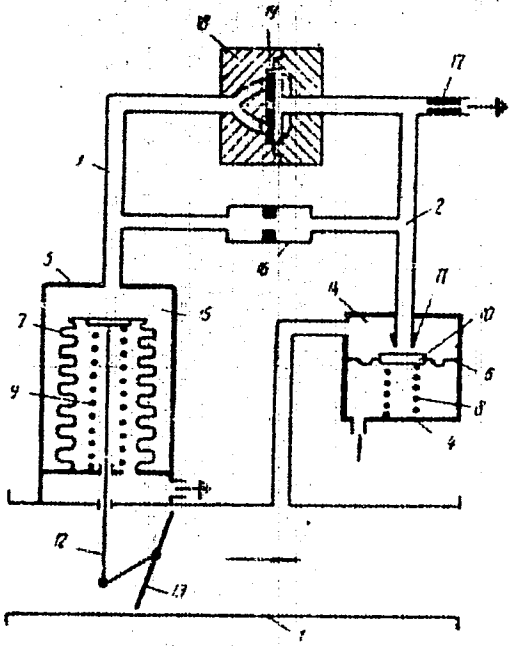
"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

AA0052381

Voronin, G. I.;
Russkov, Yu. P.;
Fedoseyev, R. Yu.



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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR UDC 621.373.531

MILYAYEV, N. A., RUSSKIKH, N. P., MISHCHENKO, N. A.

"Statistical Properties of Some Basic Parameters of D901 Silicon Varicaps and Their Effects on the Output Characteristics of a Capacitive Parametron"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1970, vyp. 215, pp 116-135 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4G203)

Translation: The distribution law of the magnitude of the capacitance and Q-factor of D901 varicaps is investigated for fixed values of the bias voltage. It is demonstrated that the distribution law of the parameters is close to normal in the entire voltage and frequency operating range at temperatures from 25 to 120° C. The basic characteristics of the distribution law are obtained: the general mean with fiducial limits, the mean square deviation, and so on. The amplitude and phase variations of the capacitive parametron caused by variations of the basic parameters of the varicaps are defined. The bibliography has 4 entries.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC: 519.24

KRASNENKER, A. S., RUSSMAN, I. B.

"On Two Models in the Leader Problem"

Tr. Mat. fak. Voronezh. un-t (Works of the Mathematics Department, Voronezh University), 1970, vyp. 2, pp 49-54 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V330)

Translation: The authors prove an elementary statement on the equivalence (under certain conditions) of two known methods of determining the significances of objects from the results of paired comparisons. G. Ivchenko.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

DAVNIS, V. V., RUSSMAN, I. V. and SHTEYN, B. Ye.

"One Method of Classification"

Vopr. Optimal'n. Programmir. v Proizv. Zadachakh [Problems of Optimal Programming in Production Problems -- Collection of Works], Voronezh, 1972, pp 105-117 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V545).

Translation: The following interpretation of the class of "similar objects" is studied. Suppose there is a finite set of objects, each of which is described by a fixed set of characteristics. Among all possible permissible subdivisions of this set of objects into classes, the problem is to find that, the classes of which satisfy the following condition. For an arbitrarily selected object of a certain class, at least one object of the same class must be found, the interrelationship with which is stronger than with any object not belonging to this class.

The problem of subdivision into classes (in terms of graph theory) is formalized for this interpretation. The authors present the following

Theorem 1. The different distances between the subsets of all possible division of set $R = \{1, 2, \ldots, N\}$ into two classes number not over N-1, and

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

Davnis, V. V., Russman, I. V. and Shteyn, B. Ye., Vopr. Optimal'n. Programmir. v. Proizv. Zadachakh, Voronezh, 1972, pp 105-117.

they are all realized on the lines of the tree of minimum distances (TMD).

Using this theorem, the authors reduce the solution of the problem stated to the construction of a TMD and determination of the lines of maximum length. A classification algorithm is described, based on the construction of TMD, for which a program was written for a Minsk-22 computer. The problem, requirig subdivision of 270 objects, each of which is described by 10 characteristics, into classes, was solved in 20 minutes.

Yu. Finkel'shteyn

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

RUSSO, V. L., et al., Svarochnoye Proizvodstvo, No 11, Nov 71, pp 1-3

method lies in increasing the power energy concentration on the heating spot, i.e., increasing the intensity of the heat flux in the spot up to values of violent vaporization of the overheated metals. This will increase the arc pressure on the molten metal in the weld crater. It appears that this technique is correlated with the second method since reducing the spot dimensions will actually increase the heat flux intensity. Analysis of these considerations and those from earlier research on this subject indicates that the most effective method of increasing the mechanical action of the arc on the molten metal in the weld crater relative to area and decreasing the surface tension forces is to increase the energy concentration in the heating spot, for example, by compressing the arc. The mechanisms of penetration in both arc and electron beam welding techniques appear to be the same and differ only quantitatively.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

Titanium

USSR

UDC: 621.791:669.295

RUSSO, V.L. (Doctor of Techn. Sciences), KUDOYAROV, B.V. and ISKOZ, B.B. (Candidates of Techn. Sciences), NIKOLAYEV, A.A., POLYAKOV, V.M., BARKAN, Z.M., LYAMIN, A.M., and GRINFEL'D, R.A. (Engineers)

"Semi-Automatic Butt Welding of Heavy-Gage Titanium Alloys Without Grooving"

Moscow, Svarochnoye Proizvodstvo, No 10, Oct 71, pp 20-21

Abstract: The most advanced welding techniques are those which provide high-capacity joints with geometric shapes offering maximum strength of the weld metal interlayer on contact with the much stronger base metal. This article discusses manual consumable-electrode welding technology for butt joints of titanium alloy plates, 20 to 100 mm thick. The test material was VT5 titanium alpha-alloy (base metal) with a tensile strength from 75 to 82 kg/mm^2. VT1 alloy was the filler wire (tensile strength 40-43 kg/mm^2). A formula is given for calculating the value at which the weld joint tensile strength will be equal to that of the base metal. A curve is shown to demonstrate the effect of interlayer dimensions on the tensile strength of the weld. The mechanical properties of the interlayer are generally determined by two factors: the properties of the filler or electrode metal (weld metal) and the share of the base metal in the weld metal. Ultrasonic quality control of the test welds revealed faulty fusions in some weld areas. Use was made of a special jig

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RUSSO, V. L., et al, Svarochnoye Proizvodstvo, No 10, Oct 71, pp 20-21

to maintain the angle of the electrode to the weld, prevent vibrations, and monitor a constant welding rate. The welding was done on a PGT-2 semi-automatic welder. The mechanical properties of both the weld metal and the joint on specimens (6 mm in diameter) include a tensile strength of 64.6 kg/mm^2, a yield point of 56.5 kg/mm^2, an elongation of 14 percent, an area reduction of 39.2 percent, a notch toughness (round notch) of 9.8 kg/mm^2, and a bending angle of 120° (on specimens with longitudinal welds). The value at which the weld joint is equal in tensile strength to that of the base metal was established at 0.1 to 0.35 and the ratio is $\sigma_{t.s.}^{m.} / \sigma_{t.s.}^{w.m.}$

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USSR

UDC 546.711'22 + 546.711'23

RUSTAMOV, A. G., KERIMOV, I. G., VALIYEV, L. M., and BABAYEV, S. KH., Institute of Physics, Academy of Sciences Azerbaydzhan SSR

"Electric Properties of MnS and MnSe Single Crystals"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 6, No 7, Jul 70, pp 1339-1340

Abstract: The authors prepared single crystals of the compounds MnS and MnSe by the method of chemical transport reactions and studied their conductance and thermo EMF. Data are given on the temperature dependence of the conductance and thermoelectric coefficient.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

RUSTAMOV, B. R., FAYZULIN, F. G., KON'SHINA, L. N., and SEITNIYAZOV, U. S., Uzbek Scientific Research Institute of Medical Parasitology and Helminthology imeni L. M. Isayev

"Some Characteristics of the Epidemiology of Zoonotic Cutaneous Leishmaniasis in Northern Regions of the Karakalpak ASSR"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 12, Dec 71, pp 61-62

Abstract: Examination of 15,000 subjects in 28 hamlets of the Takhtakupyrsk Rayon and 2500 subjects in the Muynakak Rayon of the Karakalpak ASSR indicated that 240 persons hadh had cutaneous leishmaniasis (227 in the Takhtakupyrsk Rayon and 13 in the town of Muynak). Both rayons are located in the northern part of the Karakalpak ASSR. There were no indications of occurence of the disease among the native population. Cases of cutaneous leishmaniasis had occurred since at least 1900 in the area studied. Those who had recovered from the disease comprised 0-2.5% and 0.4-7.5% (1.5% on the average) of the population of settled localities of the desert and of cases, respectively. The incidence of the disease increased during 1966-68, as indicated by the fact that 54% of past infections occurred during these three years vs 75% during 1961-68. Of those who had recovered from the disease, 54.6% were infected at an age $<$ 10 yrs and only 16.5% at an age $>$ 20 yrs.

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USSR UDC 541.183

ISMAILOV, N. P., MANSUROV, P. KH., and RUSTAMOV, KH. R., Tashkent Polytechnic Institute

"Thermodynamics of Ion-exchange Sorption of Anabasine and Lupinine on an H-Cation Exchanger"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 8, Aug 70, pp 2064-2066

Abstract: The authors studied thermodynamic potential, enthalpy and entropy in the sorption of anabasine and lupinine on an H-cation exchanger. Anabasine hydriodide and lupinine hydrochloride with a melting point of 253 and 212° C respectively were used. The experiments were staged on cation exchanger KU-2 under static conditions at 20 ± 1° C. Thermodynamic functions were determined through the thermodynamic ion-exchange equilibrium constant. The results indicate selective sorption of anabasine and lupinine on the cation exchanger.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--KINETICS OF THE CONDENSATION OF UREA WITH BUTYRALDEHYDE -U-

AUTHOR-(02)-IBRAGIMOV, K.KH., RUSTAMOV, KH.R.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44 (6), 1563-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--REACTION KINETICS, CONDENSATION REACTION, UREA, ALDEHYDE, BUTYRIC ACID, ACTIVATION ENERGY, CATALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605012/F03 STEP NO--UR/0076/70/044/006/1563/1565

CIRC ACCESSION NO--AP0140329

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140329

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF THE CONDENSATION OF UREA WITH BUTYRALDEHYDE WAS STUDIED UNDER STATIC CONDITIONS IN THE PRESENCE OF A SOLN. OF ALKALI OR OF ION EXCHANGE RESINS. THE HEAT OF THE REACTION AND ITS ACTIVATION ENERGY WERE INDEPENDENT OF THE CATALYSTS. THE MECHANISM OF THE CATALYSIS WAS IDENTICAL FOR BOTH HOMOGENEOUS AND HETEROGENEOUS REACTION PATHS. THE REACTION WAS FIRST ORDER IN ALK. FUNCTION. FACILITY: TASHKENT. POLITEKH. INST., TASHKENT, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CONSTRUCTING A CODE CONVERTER FOR MECHANICAL MOVEMENT WITH FIXED CODING MASKS -U-

AUTHOR-(03)-NABIYEV, I.A., RUSTAMOV, N.S., AKHMEDOV, R.M.

COUNTRY OF INFO--USSR

SOURCE--NOVOCHERKASSK, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: ELEKTROMEKHANIKA, NO 2, 1970, PP 157-164

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--CODE CONVERTER, MECHANICAL MOTION INSTRUMENT, MAGNETIC CIRCUIT, MAGNETODIELECTRICS, TRANSISTORIZED CIRCUIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1676 STEP NO--UR/0144/70/000/002/0157/0164

CIRC ACCESSION NO--AT0123501

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0123501

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS STUDY PROBLEMS ASSOCIATED WITH THE CONSTRUCTION OF CODE CONVERTERS FOR MECHANICAL MOVEMENT. THE METALLIC INDICATOR OF THE PRIMARY METER OF THE TECHNOLOGICAL PARAMETERS IS USED AS THE DRIVING ELEMENT WHILE A FIXED, ATTACHED, CODING MASK IS USED AS THE SENSING ELEMENT. THE MASK CONSISTS OF AN INSULATING PLATE WITH INDUCTANCE COILS WITH A MAGNETIC CIRCUIT MADE FROM A ROD TYPE MAGNETODIELECTRIC. THESE ARE LOCATED WITH RESPECT TO THE SCALE OF A GIVEN CODE. THE INDUCTANCE COILS ARE GROUPED ACCORDING TO THE NUMBER OF CODE DIGITS AND ARE THUSWISE CONNECTED TO THE OSCILLATION CIRCUITS OF TRANSISTOR TYPE, IC, AUTOGENERATORS OPERATING UNDER CONDITICNS OF GENERATING CURRENT CUT OFF DURING INTRODUCTION OF BODIES INTO THE ELECTROMAGNETIC FIELD OF THE COILS MENTIONED ABOVE. SCHEMES ARE PRESENTED FOR CODING MASKS WITH VARIOUS CODE SCALES. METHCDOLOGY FOR THEIR CONSTRUCTION IS GIVEN AND STUDY RESULTS PRESENTED. THESE MAKE IT POSSIBLE TO RAISE THE DISCRIMINATION AND SIMPLIFY THE DESIGN OF THESE MASKS.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 519.21

RUSTAMOV, R.

"One Generalization of an Inequality of S. N. Bernstein"

[Tr.] Tashkent, Politekhn. In-ta [(Works) of Tashkent Polytechnical Institute], No 56, 1970, pp 67-72, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V15 by B. Rogozin).

Translation: For random quantity $\xi_1 + \ldots + \xi_\nu$, where $\xi = \{\xi_i\}_{i=1}^{n}$ is a sequence of independent random quantities for which $M\xi_i = 0$, $M\xi_i^2 \leq h$, $|M\xi_i^m| \leq m!h^2H^{m-2}/2$, $i = 1, 2\ldots$, (H is a positive constant), a Bernstein type inequality is established, where ν is an integer, nonnegative random quantity, independent of sequence ξ (this latter condition is omitted in the work by mistake).

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC: 621.378:530.145.18

DMITRIYEV, V. G., KUSHNIR, V. R., RUSTAMOV, S. R., FOMICHEV, A. A.

"Optimizing the Parameters of a Continuously Q-Switched Nd:YAG Laser With Nonlinear Crystal in the Cavity"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 111-112

Abstract: The paper gives the results of experiments on optimizing Nd:YAG laser parameters with conversion of emission to the second harmonic when a nonstoichiometric lithium metaniobate crystal is located inside the cavity. The laser operates in the quasicontinuous mode. So-called 100% conversion is attained when the average emission power on the fundamental harmonic is 310 mW. The peak powers on the fundamental and the second harmonic are 370 and 500 W respectively. The authors thank N. V. Shkunov for constructive criticism. Two illustrations, bibliography of eight titles.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

UDC 621.375.82

USSR

DMITRIYEV, V. G., KUSHNIR, V. R., RUSTAMOV, S. R., and FOMICHEV, A. A.

"Optimization of the Parameters of Alumino-Yttrium Garnet Lasers With Neodymium in a Quasi-Continuous Generation Mode With a Nonlinear Element Inside the Resonator"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2, Moscow, "Sov. radio," 1972, pp 111-112 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D908)

Translation: The results of experiments on the optimization of an alumino-yttrium garnet laser with Nd under transformation of its radiation to the second harmonic in a nonstoichiometric lithium metaniobate crystal which was placed inside the resonator are presented. The operating mode of the resonator was quasi-continuous. So-called 100% transformation was obtained for an average power of the basic radiation of 310 mw. The peak powers of the basic radiation in the harmonic were 370 and 500 w. 8 ref. Authors abstract.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

UDC 621.373.826:621.317

USSR

ANGERT, N. B., BUTYAGIN, O. F., ZORENKO, V. P., KUDRYAVTSEVA, A. P., KUSHNIR, V. R., RUSTAMOV, S. R.

"Phase Matching Angles and Temperatures for Lithium Metaniobate Crystals with Different Stoichiometry"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), Moscow, No 5, 1971, pp 126-129 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D454)

Translation: The results of measuring the phase matching angles and temperatures for generation of the second harmonic in $LiNbO_3$ crystals with stoichiometric coefficient from 0.9 to 1.2 are discussed. A helium-neon laser (λ = 1152 nm) and a YAG:Nd^{3+} garnet laser (λ = 1064 nm) were used for the measurements. The results obtained are in good agreement with the calculated results. There are 2 illustrations and a 6-entry bibliography.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--ON THE NATURE OF LYTIC EFFECT OF FIBRINOGEN HEPARIN AND TYROXIN HEPARIN COMPLEXES ON FIBRIN -U-

AUTHOR--KUDRYASHOV, B.A., LYAPINA, L.A., MOLCHANOVA, L.V., RUSTAMOVA, B.A.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY MEDITSINSKOY KHIMII, 1970, VOL 16, NR 2, PP 161-168

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FIBRINOGEN, HEPARIN, THYROXINE, FIBRIN, FIBRINOLYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/0794 STEP NO--UR/0301/70/016/002/0161/0168

CIRC ACCESSION NO--AP0102757

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102757

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPLEX TYROXIN HEPARIN (TYRH) POSSESSING BOTH IN VIVO AND IN VITRO BY ANTITHROMBIN AND LYTIC ACTION ON FIBRIN IN MODEL SYSTEM WAS OBTAINED. FIBRINOLYTIC ACTIVITY OF THE COMPLEX IS PRESERVED IN THE PRESENCE OF EPSILON AMINOCAPROIC ACID OR ANTIPLASMIN. THE COMPARATIVE STUDY OF TYRH AND FIBRINOGEN HEPARIN (FH) COMPLEXES SHOWED THE IDENTITY OF THEIR ANTITHROMBIN AND LYTIC ACTION. IT WAS ESTABLISHED THAT THESE COMPLEXES DO NOT POSSESS BY THE TRUE FIBRINOLYTIC ACTIVITY AND ACT AS SOLVENTS OF ONLY UNSTABILIZED FIBRIN. INASMUCH AS TYRH COMPLEX DOES NOT CONTAIN PROTEIN IN THE STRUCTURE, ITS LYTIC ACTIVITY IS NOT OF THE ENZYMATIC NATURE. TYRH AND FH COMPLEXES CAN BE CHARACTERIZED AS "PHYSIOLOGICAL SOLVENTS" OF UNSTABILIZED FIBRIN. THE MAXIMAL ACTIVITY OF THE COMPLEXES IS OBSERVED DURING THEIR INCORPORATION INTO THE CLOT OF FIBRINPOLYMER. FH COMPLEX ALSO POSSESS BY THE INHIBITORY ACTION ON THE PROCESS OF FIBRIN STABILIZATION BY XIII FACTOR. IT WAS PUBLISHED EARLIER THAT FH COMPLEX ARISES IN THE BLOOD AS THE DEFENCE REACTION OF THE ORGANISM ON I. V. THROMBIN ADMINISTRATION. THEREFORE THE "PHYSIOLOGICAL SOLVENTS" OF UNSTABILIZED FIBRIN ARE THE NATURAL HUMORAL AGENTS OF ANTICOAGULATING SYSTEM.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

Rustam'yan, L. A.

USE OF AN M-220 ELECTRONIC COMPUTER FOR AUTOMATIC PROCESSING OF EXTERNAL RESPIRATION PARAMETERS

[Article by L. A. Rustam'yan, N. I. Vikhrov, V. D. Skoayreva and L. R. Isayev; Moscow, Aktual'nyye Voprosy Kosmicheskoy Biologii i Meditsiny (Current Problems in Space Biology and Medicine), Russian, 1971, pp 230-232]

In investigating the functions of human external respiration in laboratory experiments in many cases there must be a routine evaluation of the state and adoption of an emergency decision. Automation of decoding and computation of the complex of external respiration parameters using an electronic computer made it possible to solve this problem.

The proposed system for the automatic processing of the parameters of respiration will make it possible to determine the following parameters: inhalation volume V_I [ml] and exhalation volume V_E [ml]; duration of inhalation t_I [sec], exhalation t_E [sec] and respiratory cycle t_{cy} [sec]; respiration rate f [resp/min], O_2 consumption (STPD) $\dot{V}_{O_2}$ [ml/min] and CO_2 release (STPD) $\dot{V}_{CO_2}$ [ml/min]; respiration coefficient $R = \dot{V}_{CO_2}/\dot{V}_{O_2}$. These parameters are computed for each respiratory cycle (inhalation-exhalation). On the basis of individual respiratory cycles it was possible to compute the mean values of these parameters in one minute.

The automatic processing system consists of a spirometer with a potentiometric output for registering the respiratory volume $V_T(t)$, SM-100 mass spectrometer for measuring the O_2 fraction $F_{O_2}(t)$ and CO_2 fraction $F_{CO_2}(t)$ during inhalation (I) and exhalation (E), a three-channel SDR-41 magnetic recorder used in registering the parameters V_T, F_{O_2} and F_{CO_2} in the form of a continuous dependence of voltage on time, and an M-220 electronic computer. The input of data from the magnetic recorder into the electronic computer was accomplished

94

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PROPERTIES OF PYRIDINECARBOXYLIC ACIDS HAVING CARBOXYL AND CARBONYL GROUPS IN POSITIONS 2 AND 3 -U-

AUTHOR-(04)-YURKINA, L.P., RUSYANOVA, N.O., LIPATOVA, L.F., KONDRATOV, V.K.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 390-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PYRIDINE, CARBOXYLIC ACID, TITRATION, MOLECULAR STRUCTURE, IR SPECTRUM, UV SPECTRUM, CARBOXYL RADICAL, CARBONYL RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0684 STEP NO--UR/0409/70/000/003/0390/0393

CIRC ACCESSION NO--AP0124356

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124356

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITRN. OF THE TITLE COMPD. IN ANHYD. SOLVENTS GAVE 1 OR 2 MAX. AT MINUS 100 TO MINUS 250 MV AND MINUS 300 TO MINUS 400 MV, WHICH ARE CHARACTERISTIC OF THE MOL. STRUCTURE. THE CHARACTERISTICS OF THE IR AND UV SPECTRA OF THE TITLE COMPDS. ARE DISCUSSED. FACILITY: VOST. NAUCH. ISSLED. UGLEKHIM. INST., SVERDLOVSK, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

Acc. Nr: AP0049505 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: 4R0079

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99808r Kinetics of 2,2'-biphenyldicarboxaldehyde photooxidation. Kalakutskii, B. T.; Rus'yanova, N. D. (USSR). *Zh. Obshch. Khim.* 1970, 40(1), 176–82 (Russ). Kinetic data on photooxidn. of diphenaldehyde (aldehyde of diphenic acid) (I) are presented. In 390–450 mμ light, the reaction proceeds only in polar solvents, so that the yield of phenanthrenequinone under static conditions is 0% in isooctane, C_6H_6 or Et_2O, but 50% in 20% aq. Me_2CO, 40% in 8% aq. MeCOEt, 32% in dry Me_2CO, and less in Me_2COH, AcOH, CCl_4, and $PhNO_2$. The reaction also gave diphenic acid (II) and 2-formylbiphenyl-2'-carboxylic acid (III)). In dry solvents, the reaction character indicates the intermediate formation of the quinone (IV) and III; the overall reaction is 1st order in respect to the aldehyde; oxidn. of the IV and III to II is also described by 1st order kinetics

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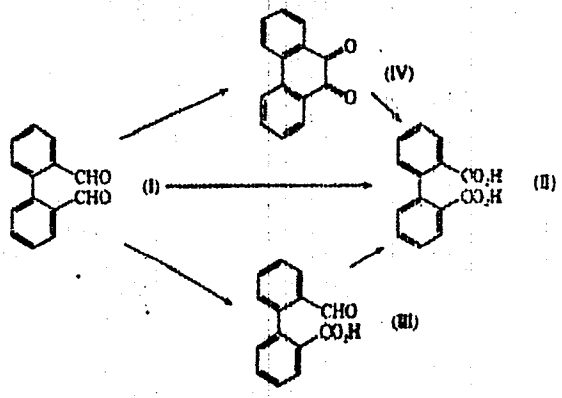

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in each case. The best scheme of the reaction is that of parallel reactions as shown. The oxidn. of I in AcOH has activation energy 3.2 kcal/mole; in MeCOEt 5.9, in Me_2CO 2.0; and in 20% aq. Me_2CO 2.7. Data for rate const. from 10°–50° are tabulated for the various solvents. IV formation is not a chain reaction, but acidic products are formed in a chain process. The quinone behaves as a sensitizer transmitting the excitation to O_2 by converting it into the active singlet state, which then acts as the oxidizing agent. In dry systems, IV readily oxidizes to II, but as more H_2O is added (which forms H bonds with IV), this substance is stabilized and its yield increases. The formation of III is retarded under such conditions. G. M. Kosolapoff

3/3

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC: 621.375.124(088.8)

RUSYAYEV, N. N. and ABDRAKHMANOV, R. Kh.

"Selective Amplifier"

Avt. sv. SSSR (Author's Certificate USSR) Class 21a^2, 18/08, (H 03 f 3/04), No. 273290, Application 27.03.69, Publication 24.08.70 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3D62P)

Translation: A selective intermediate-frequency amplifier using a common-base transistor is proposed. To improve the stability factor and make it possible to replace the transistor without retuning the circuit, the collector of each preceding amplifier is connected to the emitter of the last through an inductance, and to the base through a capacitance; here, the base-collector junction of each transistor in the amplifier is shunted by the series inductive-capacitive circuit.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

RUSYAYEV, V. F., and KUKSINSKIY, V. Ye., Chita Medical Institute

"A Study of the Effect of an Electromagnetic Field on the Coagulative and Fibrinolytic Properties of Blood"

Moscow, Biofizika, Vol 18, Vyp 1, 1973, pp 160-163

Abstract: Test tubes of blood from dogs were subjected to low-frequency (50-2,000 hertz) electromagnetic fields to study the nonthermal effects of such fields on blood properties. In whole blood the field suppressed thromboplastic activity and heightened anticoagulative activity. While fibrinolysis increased at 50, 1,000, and 2,000 hertz and decreased at other frequencies. In blood devoid of thrombocytes, the field suppressed thromboplastic and fibrinase activity, increased fibrinolysis at 1,000 and 2,000 hertz, and inhibited it at other frequencies. Heparin tolerance and heightened anticoagulative properties were also observed. In the final experiment the relationship between fibrinolysis and frequency was studied. In blood devoid of thrombocytes fibrinolysis was activated only in a very narrow frequency range (1,000-2,000 hertz). Thus electromagnetic fields do have specific, nonthermal effects on blood properties at low frequencies. It is suggested that the field induces

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

RUSYAYEV, V. F. and KUKSINSKIY, V. Ye., Biofizika, Vol 18, Vyp 1, 1973, pp 160-163

hydrophobic-hydrophilic conformation oscillations in protein molecules, and that when such oscillations become synchronized and resonance is achieved, the activity of fibrinolytic enzymes changes.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR UDC: 621.372.061.1

POL'SKIY, Yu. Ye., RUSYAYEV, N. N.

"Investigation of a Parametric Resonance Circuit With Low-Frequency Pumping"

Tr. Kazan. aviats. in-ta (Works of the Kazan' Aviation Institute), 1970, vyp. 129, pp 25-31 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D271)

Translation: The authors find the transient pulse response of the circuit, determine its equivalent circuit, and make an experimental investigation of the amplitude-frequency characteristics of a parametric comb filter with periodically varying energy parameters. A. K.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 621.396.6-181.5

BOCHKAREV, D. A., RUSYAYKIN, V. G.

"Making Flat Microinductors"

Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry), vyp. 9, Moscow, 1971, pp 30-32 (from RZh-Radiotekhnika, No 12, Dec 71, Abstract No 12V440)

Translation: A technique is developed for making flat microinductors by a winding method instead of chemical etching or vacuum vaporization. Introduction of this technique enables production of microinductors with a high specific inductance of the order of 2-3 $\mu H/cm^2$.

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1/2 022 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--EFFECT OF HEAT TREATMENT ON MECHANICAL AND TECHNOLOGICAL PROPERTIES OF 19KHGS STRIP STEEL -U-

AUTHOR-(03)-RYABUSHKIN, YU.P., GREBNEV, N.P., RUSYY, V.D.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, AVTOMOBIL'NAYA PROMYSHLENNOST', NO 4, APR 70, PP 35-37

DATE PUBLISHED----APR70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--CHROMIUM STEEL, MANGANESE STEEL, SILICON STEEL, LOW ALLOY STEEL, METAL HEAT TREATMENT, MECHANICAL PROPERTY, MACHINABILITY, CARGO TRUCK/(U)19KHGS LOW ALLOY STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1516 STEP NO--UR/0113/70/000/004/0035/0037

CIRC ACCESSION NO--AP0116932

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 022 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0116932

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY OF INCREASING THE STRENGTH PROPERTIES OF SIDE MEMBERS OF A TRUCK FRAME MADE OF 8MM 19KHGS STRIP STEEL BY HEAT TREATMENT IS INVESTIGATED. VARIOUS TESTS WERE CONDUCTED IN ORDER TO DETERMINE THE EFFECT OF TEMPERING TEMPERATURE (200, 400 AND 600DEGREESC) ON MECHANICAL PROPERTIES OF STEEL. THEIR RESULTS PRESENTED IN GRAPHS SHOW, THAT THE STRENGTH PROPERTIES AFTER HARDENING AND TEMPERING, ARE SUBSTANTIALLY BETTER THAN THOSE OF STANDARD 19KHGS STEEL. THE BEST RESULTS WERE OBTAINED WITH TEMPERING TEMPERATURE OF 500-600DEGREESC. TESTS CONDUCTED ON TRANSVERSE AND LONGITUDINAL SAMPLES OF V TYPE, IN ORDER TO DETERMINE THE TEMPERATURE DEPENDENCE OF THE IMPACT STRENGTH SHOW A GOOD STABILITY OF HEAT TREATED STEEL, WITH RESPECT TO TEMPERATURE, IN THE RANGE OF PLUS 20 TO MINUS 80DEGREESC. THE MACHINABILITY OF HEAT TREATED STEEL WAS CHECKED BY DRILLING. THE RESULTS OF THIS INVESTIGATION SHOW THAT A SUBSTANTIAL IMPROVEMENT OF MECHANICAL PROPERTIES OF 19KHGS STEEL, AND IN PARTICULAR OF THE FRAME SIDE MEMBERS MAY BE OBTAINED BY HEAT TREATMENT.

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JPRS 59459

9 July 1973

FEASIBILITY OF GENERATING MEGAGAUSS MAGNETIC FIELDS USING HIGH-PRESSURE COMPRESSED GAS LININGS

[Article by Yu. B. Velikhov, A. A. Vedenov, A. D. Sedanov, V. S. Golubev, G. G. Kasharskiy, A. A. Kiselev, F. G. Rutberg, V. V. Chernukha; Leningrad, Zhurnal Tekhnicheskoy Fiziki, Russian, Vol XLV, No 2, 1975, signed to press 8 June 1971, pp 429-435]

The results of calculation of a setup, designed for generating a megagauss pulse magnetic field in a large volume, are presented in this article. The magnetic field is amplified by compression in a cylindrical metal case, pushed by high-pressure gas (1,000-2,000 atm). The expected energy in the compressed magnetic field is several MJ and the lifetime of the field is of the order of 10 usec. In contrast to apparatus using explosives, the examined device is nondestructive; in contrast to devices used for compressing a shell with the energy of an electromagnetic field, the examined system does not experience the problems of super-power storage units and electromagnetic energy commutators.

Introduction

Pulsed megagauss fields, especially in a large volume and with high (~1 MJ and above) energies, are very important in modern industry. Thus, they may be used for solving the problem of controlled thermonuclear synthesis [1], investigating matter at superhigh pressures [2], generating a pulse of electromagnetic energy at high power and energies (10^{14}-10^{15} W, 10^{8}-10^{9} J). The literature contains the results of analysis of pulsed megagauss fields by collapsing a metal case using explosives [3] or the energy of a capacitor bank [4-6]. The use of explosives is technologically difficult and leads to total destruction of the system; the use of capacitor banks is limited for practical purposes to the energy level of 10^{6}-10^{7} J.

The use of the energy of compressed gas for collapsing a cylindrical metal shell (liner), amplifying a magnetic field by "adiabatic" compression

RUTBERG, F.G.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

by the conducting cylinder, the generatrices of which are parallel to the magnetic force lines, is considered promising. The advantages of this method are: 1) the system is non-destructive; the mechanical requirements on strength are the same as in the case of the apparatus that uses electromagnetic energy, since the magnetic pressure that collapses the liner must have the same magnitude (1,000-2,000 atm); 2) rapid application of external pressure on the liner in the examined system does not require the development of high-power commutating systems; the electromagnetic set-up requires presently unavailable storage units and electromagnetic switches-commutators (10^8-10^9 J, 10^{11}-10^{13} W); explosive systems require synchronous actuation of the detonators; 3) the use of compressed gas makes it possible to attain more efficient transmission of energy to the field in comparison with explosives and current inductive storage systems.

The most important part of the pneumatic apparatus is the system for breaking a cylindrical diaphragm that holds back all the gas pressure (by means of a cylindrical support grill). Our apparatus incorporates a high-speed magnetic "theta-pinch" type coil [7], which generates the pulse that releases magnetic pressure.

In contrast to electromagnetic systems, the rate of collapse of the liner in a pneumatic system is limited to the speed of sound in gas. When hydrogen is used at room temperature a radial liner velocity of 10^5 cm/sec is completely feasible and is attainable for most applications. Thus, in the case of thermonuclear experiments (compression of deuterium plasma in a magnetic field), the characteristic time of adiabatic compression is determined by a velocity of $\sim 10^5$ cm/sec, which, finally, requires a very long magnetic field [8].

§1. Description of Apparatus

The apparatus for storing and converting energy (figure 1) consists of steel body 5, which houses support grate 3 and steel diaphragm 2, installed on it. In the cavity between the diaphragm and the body is gas (H_2 or He) under a pressure of 1,000-2,000 atm.

The diaphragm is a thin-wall steel cylinder with a wall thickness of the order of 1 mm, which is necessitated by the need for rapid and synchronous opening of all parts of the diaphragm (§2).

Magnetic diaphragm rupture system 4 consists of six turns (§5), wound on insulators. The design of the elements of the magnetic system is illustrated in figure 2.

The diaphragm rupture system is powered by pulsed capacitors through coaxial sealed cables 6, insulated for 50 kV. Inside the support grate, at a distance of 1-2 mm from its inner surface, is copper liner 1, 140 mm in diameter with a wall thickness of 1-2 mm. An initial magnetic field ($B_{in} = 1.2 \cdot 10^4$ G) is developed beforehand in the cavity of the liner.

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USSR

UDC 621.762

FEDORCHENKO, I. M., OGNEV, R. K., KOLOMOYETS, G. G., ANOKHIN, V. M., REYTSES, V. B., KAZANTSEVA, N. A., and RUTBERG, V. P.

"The Effect of Aluminum and Molybdenum on the Properties of Sintered Titanium at Room and Elevated Temperatures"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya Publishing House, Vol 6, 1970, pp 111-116

Translation: Results are given from research on the mechanical properties of the alloys titanium-aluminum, titanium-molybdenum, and triple alloys titanium-aluminum-molybdenum at room temperature and at temperatures raised to 300°C. The alloys were obtained by mechanical blending of powders. After compacting and sintering one time, the alloys studied had a tensile strength up to 80 gigacalories/mm^2 and elongation per unit length of 5-16%. Alloying aluminum and molybdenum increases the heat resistance of sintered titanium alloys; the short-term strength at 300°C increases by more than two times. The stress-rupture strength increases significantly during alloying. Four illustrations, one table, and four bibliographic entries.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

AA0052677 RUTBERG YE. I.

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 1-70

241301 TRENCH FILLER has a working member comprising a frame 1 with closed scraping chain 3 placed in a vertical plane. It is distinguished by mounting, in the horizontal plane additional closed scraping chain 2 to, This achieves preloosening of the soil.

12.2.66. as 1055097/29-16, POLTATEEV, I.S. et al. Kiev Binding Inst. (15.8.69) Bul. 13/1.4.69
Class 84d, Int. Cl. E 02f.

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19821444

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

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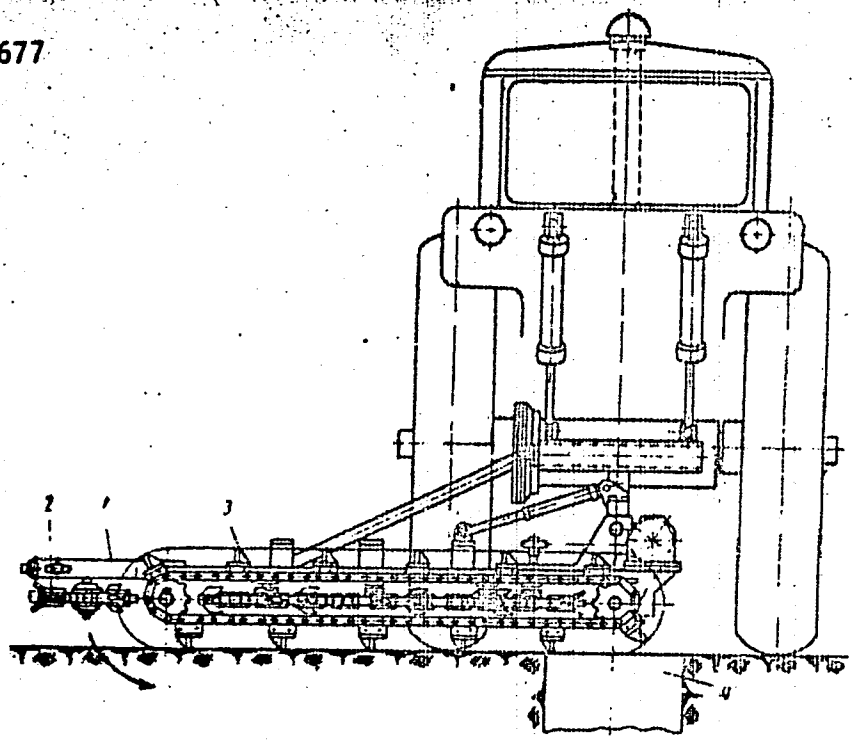

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19821445

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

AA0052677

Poltavtsev, I. S.; Smryagin, A. G.; Protsenko, V. V.; Shvedov, V. Ye.; Zgurskaya, L. M.; Lekhovich, I. F.; Rutberg, Ye. I.; Borovik, N. A., Kiyevskiy Filial Tsentral'nogo Nauchno-Issledovatel'skiy Instituta Svyazi

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19821446

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 669.187.26.065.5:669.24.5:534.321.9

MAZLENKOV, S. B., and RUTES, O. V., Central Scientific Research Institute of Ferrous Metallurgy

"Effect of Ultrasonic Treatment During Crystallization on Microchemical Heterogeneity and Anisotropy of Properties in Nickel-Base Heat-Resistant Alloys"

Moscow, Stal', No 8, Aug 73, pp 752-756

Abstract: The effect of ultrasonic treatment in the process of crystallization on alloy homogeneity and anisotropy of mechanical properties (relative elongation and reduction in area) was studied for nickel-base heat-resistant alloys EP109 (KhN56VMKYu) and EP220 (KhN51VMTYuKFR), where it was found that disintegration of the dendritic structure is increased which leads to lowering of the relative percentage of interaxial space volume and to increased homogeneity. During ultrasonic treatment a more effective chamical and structural homogenization is achieved for hot reduction and heat treatment. The effect of ultrasonic treatment depends on the nature of the phases and intermetallic compounds formed. In alloy EP220, with congruently fused intermetallides, significant grain refinement occurs and mechanical properties are more isotropic. In alloy EP109 the effect of ultrasonic treatment is less. Five figures, eight bibliographic references.
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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

RUTES, V. S., POLYAKOV, V. V., DRUSHININ, V. P., FEDORCHUK, YE. V., and KARACHUNSKAYA, M. L.

"Study of Conditions of Formation of Axial Zone in Continuous Casting of Ingots"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 251-261

Translation: The axial porosity of section steel ingots increases with increasing content of carbon in the steel and decreasing cross section of the ingot.

For each cross section of section steel and type of steel there are optimal technological parameters of continuous casting, decreasing the concentration of shrinkage defects.

High-quality rolled sections of ingots produced by continuous casting can be obtained by observing the minimum necessary total reduction. 10 figures; 2 tables; 9 biblio. refs.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

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Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 251-261

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--CONTINUOUS CASTING OF 82 TIMES 82 MM TOOL STEEL BILLETS -U-

AUTHOR-(04)-LOBANOV, V.V., GLAZKOV, A.YA., RUTES, V.S., CHIGRINOV, M.G.

COUNTRY OF INFO--USSR

SOURCE--STAL' 1970, 30(3), 233-5

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--CONTINUOUS CASTING, CAST STEEL, TOOL STEEL, ALLOY ADDITIVE, ALUMINUM, METAL ROLLING, METAL CRACKING, GRAIN SIZE, METAL POROSITY, SILICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1286 STEP NO--UR/0133/70/030/003/0233/0235

CIRC ACCESSION NO--AP0136692

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0136692
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THESE BILLETS WERE SUCESSFULLY CAST AT 2.3 M PER MIN THROUGH A 10 M NOZZLE FROM 0.7-0.8PERCENT C STEEL WHEN HOLDING TUNDISH TEMP. AT 1510-30DEGREES AND THOSE FROM 1.2-1.3PERCENT C STEEL WHEN THIS TEMP. WAS 1490-1510DEGREES. CLOGGING OF THE NOZZLE WITH NONMETALLICS WAS PREVENTED BY SUBSTITUTING AL IN THE LADLE WITH 1 KG CA SILICIDE PER TON. POROSITY AND GRAIN SIZE WERE CONTROLLED BY ADDING 0.3 KG AL WIRE PER TON TO THE MOLD, WHICH DID NOT CONTAMINATE BILLET SURFACE. EXCESSIVE PRESSURE OF 17.5 TONS PRODUCED BY THE PINCH ROLLS CAUSED CRACKING AND SEGREGATION IN BILLETS, WHICH WERE ELIMINATED BY REDUCING THIS PRESSURE TO 1.5 TONS. SURFACE FOLDS 0.5-2 MM DEEP CAUSED BY MOLD OSCILLATION WERE FULLY ELIMINATED BY SCALING IN SUBSEQUENT HEATING.

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USSR

RUTES, V. S., ASKOL'DOV, V. I., LIBERMAN, A. L., SEMENOV, N. I., GRIGOR'YEV, N. A., Central Scientific Research Institute for Ferrous Metallurgy, "Zaporozhstal'" Plant

"Economic Effectiveness in the Casting of Ship Steels Beneath a Level in a Continuous Steel Casting Unit"

Moscow, Metallurg, No 10, Oct 70, pp 20-21

Abstract: Methods of protecting metal in a crystallizer from secondary oxidation during casting of type 10KhSND, 09G2S, 09G2, and other ship steels were studied. The investigations showed that when casting was performed beneath a level of a graphite-based mixture so that the surface of the metal was protected by the heat-insulating mixture, the volume of cleaning of cast billets and of sheets after rolling was reduced, and the rate of final rejection of sheets was decreased. The economic effectiveness of this method is 4.7 rubles per ton of steel.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 669.18-147:621.746

RUTES, V. S., Doctor of Technical Sciences, CHEGRINOV, M. G., Candidate of Technical Sciences, ASKOL'DOV, V. I., Candidate of Technical Sciences, SALLAD, E. R., Engineer, and TKACHEV, P. M., Engineer, Central Scientific-Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Formation and Migration of Non-Metallic Inclusions During Continuous Steel Pouring"

Moscow, Stal', No 10, Oct 70, pp 895-897

Abstract: A high-melting ZrO_2 tracer is introduced into the inwall to clarify the principal sources of admission of non-metallic inclusions during continuous steel pouring -- the inwall of the intermediate ladle, the residue of the furnace slag, and also slag which forms as a result of secondary oxidation of molten metal. An intensive flow of metal into the intermediate ladle, determined by the falling stream, makes flotation of inclusions difficult. These flows can be weakened at a sufficiently high level of metal -- on the order of 600-650 mm -- in the intermediate ladle.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC: 513.88+517.948

RUTKAS, A. G.

"On Eigenfunctions of Unbounded Operators"

Teoriya funktsiy, funkts. analiz i ikh prilozh. Resp. nauch. sb. (Theory of Functions, Functional Analysis and Their Applications. Republic Scientific Collection), 1970, vyp. 12, pp 20-35 (from RZh-Matematika, No 5, May 71, Abstract No 5B809)

Translation: The linear operator T in Hilbert space H is considered, the imaginary part of T having a domain which is dense in H. A characteristic operator function $S(\lambda)$ is constructed for conversion of T which generalizes the concept of a Brodskiy-Livshits eigenfunction for a bounded operator. The function $S(\lambda)$ is given and studied at points of λ which do not belong to the purely point spectrum of T (T may not have regular points). A number of typical properties of eigenfunctions are established for the function $S(\lambda)$ -- metric properties relative to some manifold, some variants of the multiplication theorem. Author's abstract.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

BENTKUS, R., RUTKAUSKAS, V.

"The Asymptote of the First Two Moments of Spectral Second Order Estimates"

Lit. mat. sb. [Lithuanian Mathematics Collection], 1972, 13, No 1, pp 29-45 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V214 by the authors)

Translation: Suppose $X(t)=\{X_a(t)\}$, $a=1,\ldots,r$, $t\in T$ is an r-dimensional random field, homogeneous in the broad sense, with zero mean and real components, where parameter t may be continuous, $T=R^p$, or discrete $T=\{(t_1,\ldots,t_p): t_j=\ldots,-1,0,1,\ldots\}$. Suppose, further, $I_N(\lambda)=\{I_{ab}^{(N)}(\lambda)\}$, $a,b=1,\ldots,$, is a second order matrix of periodograms, constructed from the sample $\{X(t), <0<t_j\leq N_j, j=1,\ldots,p$, ϕ is a certain limited function, while ϕ_N is a certain kernel. This work studies the asymptotic behavior as $\min_{1\leq j\leq p} N_j\to\infty$ of the first two components of the estimates $\int\phi(\lambda)I_{ab}^{(N)}(\lambda)d\lambda$ and $\int\phi_N(\lambda)I_{ab}^{(N)}(\lambda)d\lambda$. The conditions of the theorems are placed on first and third order spectral densities and on the kernel ϕ_N.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

RUTKAUSKAS, V. M.

"Mathematical Economic Modeling of Growth Rates of the Productivity of Labor"

Tr. AN LitSSR [Works of Academy of Sciences, Lithuanian SSR], 1972, Vol A, No 4(41), pp 23-32 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V602, by the author).

Translation: A mathematical economic model is suggested, looking upon the national economy as an n-branch economic system over T years. Certain possible cases of utilization of the model are studied. The capabilities are indicated for quantitative correlation of certain results of the activity of the economic system to the rate of growth of productivity of labor. Relationships are suggested which relate the overall production levels and productive capital investments to the rates of growth of productivity of labor. A specific example is presented of the use of the model suggested under the conditions of the economy of a republic; certain of the results produced are indicated.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/3 019 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--UNSATURATED DERIVATIVES OF HYDANTOIN. I. SYNTHESIS OF N-METHYL DERIVATIVES OF 5,CARBOXYMETHYLIDENEHYDANTOIN AND HYDANTOIN,5, ACETIC

AUTHOR-(04)-RUTKOVSKIY, G.V., IVIN, B.A., SOCHILIN, YE.G., TSERETELI, I.YU.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 389-95

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, UV SPECTRUM, NMR SPECTRUM, IR SPECTRUM, UREA DERIVATIVE, CYCLIC GROUP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1963 STEP NO--UR/0079/70/040/002/0389/0395

CIRC ACCESSION NO--AP0112928

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

2/3 019 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0112928

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TREATING 5,CARBETHOXYMETHYLENEHYDANTOIN (I) WITH CH SUB2 N SUB2 GAVE THE 3-ME DERIV. (I), M. 134DEGREES. HOLDING AN EQUIMOLAR MIXT. OF DI-ET ASPARTATE AND MENCO 12 HR GAVE 70PERCENT DI-ET GAMMA METHYLUREIDOSUCCINATE, M. 86DEGREES, WHICH HEATED WITH 20PERCENT HCL GAVE 80PERCENT 3,METHYL,5,HYDANTOINYLACETIC ACID, M. 177DEGREES, WHICH WITH 1 MOLE BR SUB2 IN ACOH AT 100DEGREES, THEN WITH HOT H SUB2 O, GAVE 70PERCENT 3,METHYL,5,CARBOXYMETHYLENEHYDANTOIN, DECOMPD. 300DEGREES, WHICH WITH DRY HCL IN ETOH GAVE 80PERCENT I. SIMILARLY, BUT WITH EXCESS CH SUB2 N SUB2, WAS PREPD. 100PERCENT 1,3,DIMETHYL,5, CARBETHOXYMETHYLENEHYDANTOIN, M. 56DEGREES. REFLUXING ME N, METHYLASPARTATE WITH BZNCO IN C SUB6 H SUB6 12 HR GAVE 72PERCENT MEO SUB2 CCH SUB2 CH(CO SUB2 H) NMECONHBZ, M. 113DEGREES, WHICH WITH HCL AS ABOVE GAVE 1,METHYL,5,HYDANTOINYLACETIC ACID, M. 170DEGREES, WHICH WITH MENCO IN 6 HR AT 40DEGREES GAVE 87PERCENT 1,3,DI,ME ANALOG, M. 130DEGREES. HEATING I IN AC SUB2 O 5 HR GAVE 82PERCENT 3-AC DERIV., M. 138DEGREES, WHILE TOSYL CHLORIDE IN ET SUB3 N-DIOXANE GAVE 86PERCENT 3-TOSYL DERIV., M. 205DEGREES. TREATED WITH CH SUB2 N SUB2 THESE GAVE THE RESP., 1-ME DERIVS., M. 53 AND 157DEGREES, RESP. THE FORMER AND ALC. KOH GAVE IN 3 HR 75PERCENT 1, METHYL,5,CARBETHOXYMETHYLENEHYDANTOIN, M. 128DEGREES. I, PARAFORMALDEHYDE, AND PIPERIDINE IN DMF GAVE 70PERCENT 3,PIPERIDINOMETHYL,5,CARBETHOXYMETHYLENEHYDANTOIN, M. 87DEGREES. UV AND NMR SPECTRA DATA, AND IR CURVES WERE GIVEN. ALL THE 5,HYDANTOINYLACETIC ACIDS PREPD. ABOVE HAD THE DIKETO STRUCTURES, AS REFLECTED IN THEIR

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

3/3 019 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0112928
ABSTRACT/EXTRACT--FACILITY: LENINGRAD. TEKHNOL. INST. IM. LENSOVETA, LENINGRAD, USSR.

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USSR

RUTKOVSKIY, I. V., LOBOV, A. I.

"Device for Continuous Recording of Bioelectric Potentials of Plants Under Field Conditions"

Kishinev, Elektronnaya Obrabotka Materialov, No 4, 1970, pp 81-86

Abstract: A device suggested for recording of bioelectric potentials of plants under field conditions is described, and a photograph and schematic diagram are presented. Since dc amplifiers with direct coupling between stages have considerable zero drift, the device uses modulation, amplification and subsequent demodulation of the measured signal. The modulator consists of a polarized relay. Temperature stabilization is assured by the use of dividers in the base and emitter circuits. The conversion frequency is about 100 Hz. The sensitivity of the device varies between 1 mv and 1.3 v, in seven scale ranges.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 621.383.032.217.2

RUTKOVSKIY, I.Z., SHABEL', N.N.

"Conductivity Of Some Photocathodes During Cooling"

Vestn. Belorus. un-ta (Bulletin Of Belorussian University), Series 1, No 2, pp 88-89 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 72, Abstract No 9A160)

Translation: The variation is studied of the value of the longitudinal resistance of semitransparent oxygen-silver-cesium and multialkali photocathodes during deep cooling. It is shown that the change of the longitudinal resistance of the cathodes of a photomultiplier which were studied was small in the temperature range 140--300° K. The temperature resistance coefficient of the photocathodes is nonlinear and differs in various models of multiplier with respect to both magnitude and sign. For the multipliers studied, cooling of the photocathode should not impair their characteristics. 1 ill. 5 ref.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC 620.193.41

MESHCHERYAKOVA, I. D., KASHCHEYEVA, T. P., and RUTKOVSKIY, M.L.

"Behavior of Titanium in Ethanol-Aqueous Solutions of Hydrogen Chloride"

Moscow, Zashchita Metallov, Vol 6, No 3, May-Jun 70, pp 286-289

Abstract: An investigation was made of the corrosion and electrochemical behavior of VT-1 titanium in ethanol solutions of HCl containing various amounts of water in order to determine the possibility of using titanium as a structural material for production facilities where the basic aggressive medium is ethanol-aqueous solutions of HCl. The experiments were performed at room temperature in a 20% ethanol solution of HCl without water and with 2-80% water. It was found that titanium is not passivated in a water-free 20% ethanol solution of HCl and that it corrodes by the electrochemical mechanism at a rate of ~5 mm/year. In solutions containing 4-6% water, titanium has a tendency toward pitting. A linear relation was observed between the activation potential and the logarithm of the water concentration. Titanium can be used as a structural material in 20% ethanol solutions of HCl containing 9-32% water. In this case the corrosion rate of the titanium does not exceed 0.01 mm/year. The mechanism of the inhibitor effect is discussed briefly.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR

UDC: 629.78.062.2

POPOV, V. I., RUTKOVSKIY, V. Yu.

"Investigation of the Dynamics of a System for Predamping a Gravitationally Stable Satellite With Regard to Limitations of Pickups and Flexural Oscillations of the Stabilizer"

Moscow, Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik (Control of Moving Objects. Works of the Fourth All-Union Conference on Automatic Control. Tbilisi, 1968--collection of papers), 1972, pp 72-87 (from RZh-Raketostroyeniye, No 10, Oct 72, abstract No 10.41.73)

Translation: The authors study the dynamics of a gas-reactive predamping system on the phase plane with regard to limitations of pickups. The problem of utilizing limitations of pickups in forming nonlinear control laws is considered. It is shown that a considerable savings of reaction mass may be effected by proper selection of the coefficients in the law of regulation and the delay time in the system. Self-oscillating modes in the predamping system are studied. A stabilizer is added to the satellite to make it gravitationally stable. The stabilizer must be uncovered after separation of the

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

USSR.

POPOV, V. I., RUTKOVSKIY, V. Yu., Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968—sbornik, 1972, pp 72-87

satellite from the main lifting stage. Equations are derived for plane flexural oscillations of the satellite-stabilizer, and the resultant expressions are studied. Flexural oscillations of a satellite-stabilizer system with regard to the predamping system are investigated on a digital computer. It is shown that if the predamping system has a relay characteristic with a zone of insensitivity, flexural oscillations of the satellite-stabilizer system may be damped within an acceptable time interval. Four illustrations, bibliography of ten titles. Résumé.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202720008-8

1/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--ADAPTIVE VARIABLE PARAMETER CONTROL OF VEHICLES -U-

AUTHOR-(02)-RUTKOVSKIY, V.YU., ZEMLIAKOV, S.D.

COUNTRY OF INFO--USSR, FRANCE

SOURCE--INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL, SYMPOSIUM ON AUTOMATIC CONTROL, 3RD, TOULOUSE, FRANCE, MAR. 2-6, 1970, PAPER. 12 P.

DATE PUBLISHED--------70

SUBJECT AREAS--SPACE TECHNOLOGY

TOPIC TAGS--SPACECRAFT TRAJECTORY, FLIGHT CONTROL SYSTEM, MODEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0007 STEP NO--FR/0000/70/000/000/0012/0012

CIRC ACCESSION NO--AT0117307

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TITLE--ADAPTIVE VARIABLE PARAMETER CONTROL OF VEHICLES -U-

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DERIVATION OF A THEORETICAL BASIS FOR ADAPTIVE SPACECRAFT TRAJECTORY CONTROL SYSTEMS WITH VARIABLE PARAMETERS. PROCEDURES ARE DERIVED FOR SYNTHETIZING BASIC AND ADAPTIVE LOOPS OF SUCH SYSTEMS. THE STABILITY AND DYNAMIC ACCURACY OF AN ADAPTIVE MODEL REFERENCE CONTROL SYSTEM ARE ANALYZED.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. USUALLY THE METHOD OF LINEARIZATION ALLOWS TO GET A MATHEMATICAL MODEL OF A VEHICLE AS A LINEAR EQUATION (1, 2) SHOWN ON MICROFICHE. IT IS OBVIOUS FROM (1) THAT THE ORDER OF THE PLANT EQUATION IS CONSTANT. THE SYNTHESIS OF A CONTROL SYSTEM MAY BE REPRESENTED AS A MINIMIZATION OR RESTRICTION PROBLEM OF A FUNCTIONAL, Q, (3) SHOWN ON MICROFICHE. AT PRESENT THE METHOD WHICH IS WIDELY APPLIED FOR THE CONSTRUCTION OF A CONTROL SYSTEM IS TO MAKE THE VARIABLE MOVE SO AS TO PROVIDE THE DESIRED MOTION OF THE CONTROL VARIABLE. WE SHALL NAME THIS METHOD OF PLANT CONTROL AS THE VARIABLE METHOD. USUALLY THERE IS A SERVOMECHANISM IN THE STRUCTURE OF A CONTROL SYSTEM TO MOVE THE FINAL CONTROL ELEMENT (4)(SHOWN ON MICROFICHE). OFTEN A CONTROL SYSTEM IS DESIGNED AS A COMBINED SYSTEM WHERE BOTH CLOSE LOOP CONTROL AND OPEN LOOP CONTROL ARE APPLIED. IF DYNAMIC PROPERTIES VARY WIDELY OVER ONE FLIGHT REGIME OR FROM ONE REGIME TO ANOTHER, A REGULATOR ALSO HAS TO BE ADJUSTABLE TO PROVIDE . MINIMIZATION OR RESTRICTION OF FUNCTIONAL (3). AS A RESULT WE OBTAIN ADAPTIVE VARIABLE CONTROL OF A PLANT. SOMETIMES ADAPTIVE VARIABLE CONTROL DOES NOT PROVIDE RESTRICTION OF FUNCTIONAL (3) WITHOUT SPECIAL CHANGING THE PLANT DYNAMIC PROPERTIES. PURPOSEFUL CHANGE OF PLANT PARAMETERS WILL BE TERMED AS THE PARAMETER CONTROL METHOD.

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1 A70-24308 # Control of the angular motion of a deformable satellite with distributed masses. I (Upravlenie uglovym dvizheniem deformiruemogo sputnika s raspredelennymi massami. I). V. Iu. Rutkovskii and V. M. Sukhanov. *Kosmicheskie Issledovaniia*, vol. 8, Jan.-Feb. 1970, p. 71-79. In Russian.

Development of a method of formulating the differential equations for the angular motion of deformable earth satellites, the distinguishing feature of which is the presence of elastic elements with a distributed mass. According to this method, the mechanical system in question is broken down into separate parts, one of which is a solid body (taken as the main body), while the remaining parts are elastic elements with a distributed mass. The equation of motion of the solid body under the action of the external forces and moments of the coupling reactions applied to the main body by

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arbitrarily repulsed elastic couplings is written. The problem of determining the forced vibrations of elastic elements with a distributed mass is formulated and solved. The solutions obtained are substituted into the known expressions for the forces and moments of the coupling reactions applied by the elastic elements to the main body, and the equation of motion of an elastic satellite is written in explicit form. By switching over from the integrodifferential equation thus obtained to an operator form, the transfer function of a deformable satellite as an automatic control plant is determined.

A.B.K.

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Petrov, B. N., Rutkovskiy, V. Yu., Krutova, I. N., Zemlyakov, S. D.

PRINTSIPY POSTROYENIYA I PROYEKTIROVANIYA SAMONASTRAIVAYUSHCHIKHSYA SISTEM UPRAVLENIYA (Principles of Building and Planning Adaptive Control Systems) Moscow, "Mashinostroyeniye" 1972, 260 pp, illus, biblio, 5,300 copies printed

The book presents a brief analysis of the principles of building, the fundamentals of planning, methods of synthesizing and computing model-reference ("nontracking") adaptive control systems, which are most widely used in flight control of aircraft.

The book is intended for use by engineers and scientific workers engaged in the planning of automatic control systems, and can also be of use to students in the advanced courses at the VUZ level.

No mention is made of any particular ACS for any specific aircraft or missile system. The various types of adaptive systems are illustrated by block diagram only.

The first 99 items in the 124-item bibliography are Russian-language sources, the remaining 25 items are English-language sources.

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